Notice of Allowability	Application No.	Applicant(s)	
	08/914,868	BJORNARD ET AL.	
	Examiner	Art Unit	
	Audrey Y. Chang	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *June 25, 2002, August 4,2003*.

2. ☒ The allowed claim(s) is/are *1-6, 7-15, 18-22, 31-34, 36-43, 48-50, 54-62 renumbered as 1-6 and 8-45*.

3. ☒ The drawings filed on *19 August 1997* are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

REASONS FOR ALLOWANCE

Remark

- This Office Action is in response to applicant's amendment filed on June 25, 2002 and August 4, 2003, which have been entered into the file.
- By these amendments, the applicant has amended claims 1, 8-10, 17, 33, 36-40, 43, 49 and 50, has canceled claims 35, 47 and 51-53, and has newly added claims 54-62.
- Claims 1-5, 7-15, 17-22, 31-34, 36-43, 48-50 and 54-62 remain pending in this application.

Reasons For Allowance

1. The following is an examiner's statement of reasons for allowance: of the prior art references considered, none has disclosed a coated article or a process for making a coated article as described below and set forth in the claims:

With regard to claim 1, the coated article is comprised of a *temperature sensitive substrate* having a *melting point lower than glass* and an anti-reflection coating. The anti-reflection coating including a plurality of layers wherein the plurality of layers including a *reactively sputtered high refractive index material* layer with index refraction ranged between 1.9 and 2.2 and is selected from the *group* of materials *claimed.* The high refractive index material layer that is farthest from the substrate has an optical thickness about one quarter to one third of a wavelength ranged between 480 and 560 nanometers.

With regard to claim 8, the process of making a coated article comprises the steps of providing a *temperature sensitive substrate having a melting point lower than glass* for receiving an anti-reflection coating. The anti-reflection coating including a plurality of layers wherein the plurality of layers including a *sputtered high refractive index material* layer with index refraction ranged between 1.9 to 2.2 and is selected from the *group* of materials *claimed.* The high refractive index material layer that is

farthest from the substrate has an optical thickness about one quarter to one third of a wavelength ranged between 480 and 560 nanometers.

With regard to claims 9 and 10, the anti-reflection coating for a substrate is comprised of *four layers* with the *specific layer materials* and *specific physics thickness of the layers* as *claimed* in each of the claims.

With regard to claim 33, the article comprising a *temperature sensitive substrate having a melting point lower than glass* and an anti-reflection coating. The anti-reflection coating including a plurality of layers wherein the plurality of layers including a *high refractive index material layer* with index refraction ranged between 1.9 and 2.2 and is *selected* from the *group* of materials *claimed.* The high refractive index material layer that is farthest from the substrate has an optical thickness about one quarter to one third of a wavelength ranged between 480 and 560 nanometers.

With regard to claims 36 and 37, an article comprising a *temperature sensitive substrate having a melting point lower than glass* and an anti-reflection coating. The anti-reflection coating including a plurality of layers wherein the plurality of layers including a *second and a fourth layer* of *high refractive index material* with index refraction ranged between 1.9 to 2.2 and is selected from the *group* of materials *claimed.* The second layer (claim 36) and the fourth layer (claim 37) each have a *specific physical layer thickness as set forth in the claim.*

With regard to claims 38-40, and 43, the method for providing an anti-reflection coating to a *plastic substrate* and an antireflection coating for a *plastic substrate*, wherein the anti-reflection coating has a *four layer structure* with the *second layer and fourth layer composed of a tin-doped indium oxide*, or is selected form the *group* of materials *claimed* in the claims (40 and 43) and the optical thickness for the second layer is about one-quarter to one-third of a wavelength from 480 to 560 nanometers.

With regard to claims 49 and 50, an antireflection coating for a *plastic substrate*, wherein the anti-reflection coating is comprised of a plurality of layers that includes a *high refractive index material*

layer having index of refraction ranged between 1.9 and 2.2 and is selected from the *group* of materials *claimed.* The high refractive index material layer that is farthest from the substrate has an optical thickness about one quarter to one third of a wavelength ranged between 480 and 560 nanometers.

The specific high refractive index materials claimed in the instant application have the advantage of not generate a lot of heat during sputtering coating process to the substrate which therefore allows the anti-reflection coating to be formed on a temperature sensitive substrate with melting point lower than glass, such as plastic.

The prior art reference US patent issued to **Okaniwa (PN. 5,667,880)** teaches an electroconductive antireflection film having high refractive index layer composed of material such as indium tin oxide with an optical thickness ranged between one quarter to one third of a wavelength in visible light **but** this reference does not teach the substrate is a temperature sensitive substrate such as plastic substrate. Furthermore, Okaniwa teaches that the anti-reflection film includes other high refractive index material that will impart large heat in the depositing process, which therefore cannot be formed on a temperature sensitive substrate such as plastic.

Contact Information

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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A. Chang, Ph.D.